

young, although it may occur at all ages. Of the writer's 10 cases—6 males, 4 females—the average was sixteen years, youngest three years, oldest thirty-seven years. The left side was more frequently attacked than the right; thus in this series, 9 out of 10. No cause can be assigned for this marked difference. The connection of this disease with mumps has been noted, though in this series of cases only one was so associated. The lacrymal sac was invariably healthy.

The symptoms are: beginning with a series of sensations of stiffness in the outer part of the upper lid, there is some pain and redness, with slight injection of the conjunctiva. The pain increases with the progress of the disease accompanied by marked oedema of the ocular conjunctiva on the outer side out of all proportion to the conjunctival inflammation accompanying it. The lacrymal gland shows distinct enlargement and induration; the vessels lying upon it are swollen and tortuous; there is moderate malaise and slight fever reaching 100° F. as the highest. As the disease progresses the eye becomes completely closed and the upper lid cannot be raised voluntarily, while eversion of the lid is extremely painful. The disease may be confounded with orbital cellulitis. This probably accounts in part for the rarity of recorded cases.

The outcome is favorable. The treatment is simple, consisting of hot fomentations with free incision to evacuate pus when such can be detected.

OTOLOGY.

UNDER THE CHARGE OF

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The Limits of Variation in the Depth of the Mastoid Antrum.—PHILIP D. KERRISON (*Archives of Otolaryngology*, June, 1903) gives some interesting results obtained from making sections of a large number of temporal bones to find out the maximum depth of the antrum to which one can proceed with safety. Politzer gives 15 mm. as a maximum depth, while Schwartze and Broca give 25 mm. and 29 mm., respectively. The author examined thirty bones to discover if any relationship exists between the length of the posterior canal wall and the depth of the antrum. The distance in millimetres between the spine of Henle externally and the inner border of the meatus was measured, then sections through the antrum were made and the distance between the antrum and the mastoid process was taken. In the thirty bones examined the length of the superior canal wall varied from 12 mm. to 18 mm. and in the same bones the depth of the antrum varied from 6 mm. to 15 mm. The deepest antrum measured 15 mm., this extreme depth

occurred in the bone in which the length of the posterior canal wall measured 18 mm. Emphasis is laid upon the fact that the depth of the antrum is invariably less than the length of the posterior canal wall and never exceeds 15 mm.

Broca directs that the antrum be opened in the centre of a square, the anterior border of which is 5 mm. behind the spine of Henle. This point is the thickest part of the mastoid process and naturally the antrum would lie at an unusual depth.

The author also calls attention to the location of the facial and the semicircular canals.

Facial Paralysis.—NORTON L. WILSON (*American Medicine*, vol. vii., No. 7). In addition to its comprehensive review of the subject, this paper contains material of interest to the otologist, both on account of questions of function of the nerve and its branches and of lesions in its course, either secondary to causative conditions in the middle ear or differentiated from them.

The so-called first branch of the facial nerve is the stapedius, supplying the muscle to the stapes; the so-called second branch is a twig to the pneumogastric which, apparently, comes off the facial trunk just above the chorda tympani. This, like the other filaments to the ganglion, is sensory, and undoubtedly goes to the geniculate ganglion, being a part of the *pars intermedia*. The chorda tympani, considered the last branch of the facial in the Fallopian canal, is nothing more nor less than a continuation of the *pars intermedia*, supplying the anterior two-thirds of the tongue with taste. There is, therefore, but one branch in the facial canal which actually comes directly from the nerve, namely, the stapedius, the other branches being all sensory and probably a part of the *pars intermedia*.

In a case of lesion external to the stylomastoid foramen, the paralysis of the facial muscles, including the orbicularis and frontalis, is not associated with disturbances of the senses of taste and hearing.

If the lesion occurs in the lower half of the facial canal, there is, in addition to the facial paralysis, loss of the sense of taste in the anterior two-thirds of the tongue on the affected side and a diminished secretion of saliva, the lesion involving the chorda tympani and twig from the glossopharyngeal nerve.

If the lesion is in the upper half of the canal so that the stapedius is involved and not the ganglion, there is, in addition to the symptoms above named, an abnormal acuteness of hearing, for tones of high pitch especially, because the paralysis of the stapedius permits the un hindered contraction of the tensor tympani, and a correspondingly increased tension of the sound transmitting apparatus of the middle ear.

Concomitant paralysis of the soft palate is usually attributed to involvement of the superficial petrosal, assuming that this nerve comes from the geniculate ganglion. In this opinion the writer does not concur, regarding these filaments as sensory and not motor, and that it is the fifth nerve which innervates the palate, and which is, therefore, the nerve involved when the palate is paralyzed. In support of this contention is the case of a man who fell a distance of eighteen feet, and was picked up unconscious, bleeding from both ears. The hemorrhage from the ears continued for two days, and he was apparently totally deaf, both to sounds aerially conveyed and to the tuning-fork, by bone-con-

duction. The left side of the face was paralyzed, and there was complaint of tinnitus and vertigo. There was a fracture of the base of the skull involving both eighth nerves and the seventh nerve of the left side. There was no sense of taste in the anterior two-thirds of the tongue on the left side, and on this side, also, the salivary secretion was apparently diminished. The uvula and soft palate were normal. Contractility of the muscles of the left side of the face was lost for the faradic current, but was apparently increased for the galvanic current.

Were the geniculate ganglion involved and the general contention correct, the soft palate would have been affected, but in this case it was normal.

Where the cause of a facial paralysis is of otitic origin, attention must be directed to the cause, and the importance of the electric reactions, both as symptoms and as prognostic indications, must be duly regarded. Electric changes soon develop in paralyzed muscles, and the reaction of degeneration, partial or complete, appears in four or five days after the paralysis occurs.

Electricity should not be applied, except to ascertain the excitability of the muscles, until the end of the third week. One month after the paralysis has occurred, electricity and massage should be used regularly and systematically. If the muscles respond to faradism, that current should be used; if they do not, galvanism should be used, but only with the galvanometer, in order that the strength of the current may be known and gradually increased if necessary.

Einige Versuche ueber die Uebertragung von Schallschwingungen auf das Mittelohr.—NAGEL and SAMOYLOFF (*Archiv für Physiologie*, 1898; *Archiv für Ohrenheilkunde*, November, 1903) state that the graphic demonstration of the movements of the drumhead, in response to sound waves or the use of the membrane as a manometric capsule for the same purpose, presuppose some approach to normal flexibility. This is attainable either through the use of fresh specimens or by the infiltration of the tissues of the membrane with substances which serve to conserve its mobility.

For the grosser forms of graphic demonstration, drumheads thus conserved will give good service for a considerable time, months or even years, and may be used also as manometric capsules for demonstration of their movements by actuation of an illuminating gas current feeding a sensitive flame, but never so satisfactorily as the membrane of a freshly killed animal or the normal membrane *in situ* in the living subject.

The latter method consists in making the external auditory canal a closed chamber by means of a stopper having two openings, one by which the illuminating gas enters the canal and the other by which it passes on to the lighted gas jet.

Actuation of the drumhead by singing, speaking, or by communication of sounds conveyed through the bones of the head, are transmitted to the gas current in the external canal and made manifest in the movements of the sensitive flames, care being taken to guard the latter from the extraneous influence of sounds aerially conveyed.

In their experiments Nagel and Samoyloff have used, as a gas chamber, not the external canal, but the tympanic cavity of freshly killed animals and of the living subject. In the former instance the illuminating gas

was introduced by means of a fine trocar passed through the Eustachian tube, while exit to the burner, a platinum tip with a minute opening, was afforded by a drillhole through the thin floor of the tympan and the insertion therein of a small rubber tube. In the living subject a tube with a T-shaped outer end was passed into the Eustachian tube, one end of the "T" connecting with the gas supply, and the other, by means of elastic tubing, with the burner.

Under these conditions sounds conveyed to the drumhead through the external canal and the vocalization of the subject of the experiment, even when only a light whispering voice was used, gave much more detailed representation in the flame than that afforded by the König manometric capsule with a rubber membrane.

Experiments were also made in reference to the question of cranio-tympanic sound transmission, but, although in themselves interesting, they seemed to have failed to negative the idea of the cranial passage of sound waves direct to the internal ear.

A vibrating tuning-fork, the influence of which upon the flame when held opposite the external canal had been noted, was placed with its stem upon the skull and the character of the flame effect compared with that produced when the external ear was firmly closed, the reaction of the flame, in the latter instance, being much increased.

That the term *craniotympanic*, as referred to the participation of the sound-transmitting mechanism of the middle ear in conveyance to the labyrinth of tones transmitted to the cranial bones is justifiable was shown by another experiment, in which, the vibrating tuning-fork having been placed upon the skull at the point previously found to give the greatest flame reaction, quicksilver or melted paraffin was poured into the external canal, effectively damping the movement of the drumhead. Under these circumstances the craniotympanic reaction was entirely wanting, the sensitive flame showing no movement whatever. On removal of the quicksilver or paraffin the flame immediately responded to the tone of the vibrating tuning-fork.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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Measurements of Relative Humidity in Offices and Dwelling-houses in Winter.—An interesting proof of the statement that the air of heated houses in winter surpasses in aridity any climate in the world is given by G. A. LOVELAND (*Engineering News*, December 10, 1903, p. 925), who relates that in consequence of the evident effect of dry air on the furniture in the United States Weather Bureau Office in Lincoln, Nebraska, which is heated by steam radiators, a consecutive record of the relative humidity was made during the following winter. The obser-